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JAN 23 2007

Docket No. 740756-2183

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REMARKS

The Office Action of April 28, 2006 was received and carefully reviewed. The Examiner is thanked for reviewing this application.

Claims 2-31 were pending prior to the instant amendment. By this amendment, claims 32-37 have been added to recite additional features to which Applicant are entitled. Accordingly, claims 2-37 are pending, of which claims 2, 5, 9, 12, 16, and 19 are independent.

Claims 2-3, 5-6, 9-10, 12-13, 16, 19-20 and 26-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Inoue (U.S. Patent No. 4,976,839 – hereafter Inoue). Claims 4, 7, 11, 14, 18, and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Inoue as applied to claims 2-3, 5-6, 10, 12-13, 16, and 20, and further in view of Nomoto et al. (U.S. Patent No. 5,225,364 – hereafter Nomoto). Claims 8, 15, and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Inoue as applied to claims 2-3, 5-6, 10, 12-13, 16 and 20, and further in view of Yamazaki et al. (U.S. Patent No. 6,586,346 – hereafter Yamazaki).

In the Office Action, the Examiner continues to assert that Inoue discloses forming an insulating film 12 of silicon nitride over a semiconductor substrate 11 by sputtering in a chamber with an atmosphere comprising gases including nitrogen of 50-75% of the gases. (See col. 6, lines 15-50 and claim 4). Further, in the Examiner's *Response to Arguments*, the Examiner states that it is obvious to one of ordinary skill in the art to routinely adjust the volume of the nitrogen in the chamber in order to improve the layer's characteristics such as modifying the layer's dielectric constant, since Inoue discloses the volume of the nitrogen is about 75 %.

However, Applicant traverses the Examiner's rejection and believe that the Examiner has misunderstood the teachings of Inoue. Inoue clearly discloses that FIG. 3 shows a schematic drawing of a conventional reactive sputtering apparatus, useful in a reactive sputtering method embodying the present invention, for forming a barrier layer in col. 6, lines 13-16. In other words, Inoue discloses a schematic drawing of a sputtering apparatus for forming a barrier layer 15, not an insulating layer 12 and discloses the range of the nitrogen volume (50-75%) when forming the barrier layer 15, not an insulating layer 12 in col. 6, lines 15-50.

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Thus, Applicant believes that Inoue does not describe or suggest the features of forming an insulating film comprising silicon nitride over a semiconductor by sputtering in an atmosphere comprising nitrogen at 75 volume % or more, as recited in all independent claims 2, 5, 9, 12, 16, and 19. Further, neither Inoue, Nomoto, Yamazaki, nor any combination thereof describes or suggests the above-mentioned features. Therefore, Applicant believes that all independent claims 2, 5, 9, 12, 16, and 19 can distinguish over these references.

Regarding claims 3-4, 6-8, 10-11, 13-15, 17-18 and 20-31, each of these rejected claims is a dependent claim. Accordingly, these claims are allowable over the cited references for at least the reasons discussed above for the independent claims 2, 5, 9, 12, 16, and 19.

In particular, regarding claims 26-31, the Examiner asserts that Inoue discloses that the targeting layer is a silicon nitride layer. However, as argued above, Applicant believes that Inoue does not teach or suggest a target comprising silicon nitride. Inoue merely discloses various targets for forming the barrier layer 15 in col. 7, lines 23-39.

Further, regarding claims 3, 6, 10, 13, 17 and 20, the Examiner asserts that Inoue discloses that the sputtering is RF sputtering, or plasma (See Fig. 1 and col. 6, lines 46-50). However, as argued above, Applicant believes that Inoue does not describe or suggest an RF sputtering method because Inoue discloses a sputtering method using DC power, which is different from an RF sputtering method.

Finally, as stated above, Applicant has added new dependent claims 32-37. These claims are believed to be supported at least at page 8, lines 23-24 and page 12, lines 25-28. Since Applicant believes that neither Inoue, Nomoto, Yamazaki, nor any combination of the three describes or suggests forming a semiconductor doped with phosphorus between the insulating film and the semiconductor, these claims 32-37 can further distinguish over these references.

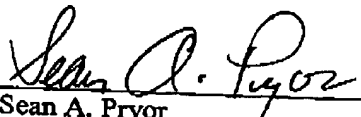
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In view of the foregoing, it is respectfully requested that the rejections of record be reconsidered and withdrawn by the Examiner, that claims 2-31 be allowed, that new claims 32-37 be allowed, and that the application be passed to issue. If a conference would expedite prosecution of the instant application, the Examiner is hereby invited to telephone the undersigned to arrange such a conference.

Respectfully submitted,


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